

Detroit

Model D
“Eight”

Briggs-Detroit
Company, Detroit
Michigan, U. S. A.

An Entirely New Enjoyment in Motoring

There is a new sensation, a new enjoyment in motoring, which those who have not ridden behind an "Eight" have yet to experience.

That which first impresses a motorist who takes his first ride in an "Eight" is the lack of vibration when the motor is idling, and even when it is turning over at a high rate of speed.

This remarkable freedom from vibration is due to light and exceptionally strong reciprocating parts, made of special alloy steel and machined to a close margin, giving almost perfect balance.

From a standing start it is possible to attain maximum speed within the distance of an average city block. The "get away" powers of the "Eight" are a revelation and a delight, and the advantage of quick "pick up" powers can be most thoroughly appreciated in a ride through crowded traffic, where frequent stops are necessary.

But the most impressive feature of the "Eight" is the wonderful flexibility of the motor, approaching, as it does, nearly to the flexibility of a steam engine.

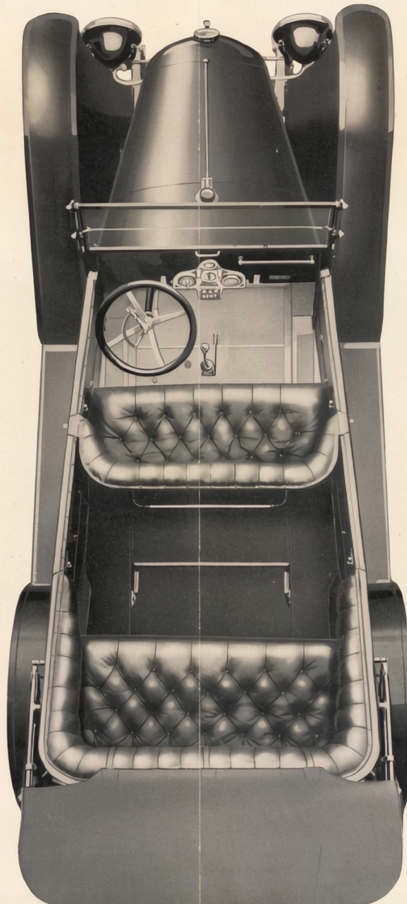
Because of the more continuous torque, due to the overlap of power impulses, the Detroit "Eight" can be throttled down to a speed of $2\frac{1}{2}$ miles per hour on high gear—slower than the average walk.

For this reason the Detroit "Eight" is the ideal city car. Except where stops are necessary, no gear-shifting is required, the widest variation of speed being possible on high gear.

The performance of the Detroit "Eight" on hills and in heavy roads is most impressive to the motorist enjoying for the first time a ride in the new car—the first ride always makes a complete convert to the "Eight."



Detroit control—two pedals, one rod starting switch, accelerator, cut-out—the simplest control imaginable



Top view of 1915 Touring Car—unusual roominess as well as completeness of equipment

The car negotiates the most difficult grades and the heaviest sand or mud without apparent effort.

There is an even, steady pull, without pounding or other evidence of laboring.

Seldom, indeed, is it necessary to drop into second, and the response to the throttle control is as instantaneous and positive as an electric.

And at all times there is the feeling of security in the knowledge that the reserve power in the remarkable motor is there should an emergency require it.

"Eight" vs. "Six"

For a given power the eight-cylinder is lighter than the six-cylinder.

The crankcase is decidedly lighter in the eight, being 25 per cent shorter than in the six.

The crankshaft of the eight is practically the same length as that of the four-cylinder engine.

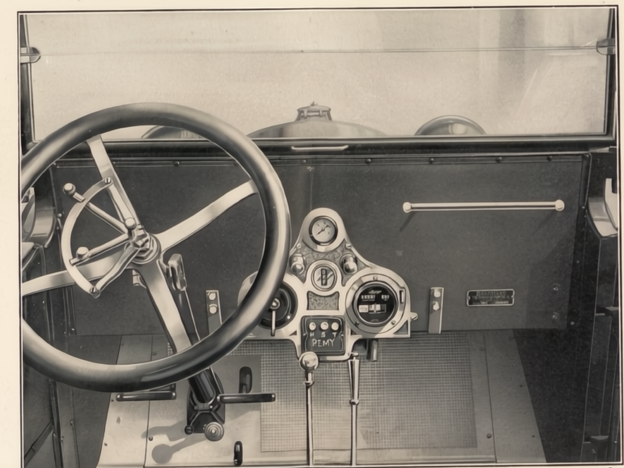
The eight-cylinder has torque 33 per cent more uniform than that of the six.

The eight-cylinder V-engine is very adaptable for the grouping of all its accessories.

The camshaft in the eight-cylinder has eight cams, as compared with twelve cams in the six-cylinder.

Because of the cylinders being much smaller, a higher compression can be used in the eight-cylinder than in the six.

Mechanical efficiency of eight is high, as frictional losses are not great, as the quantity of rotating bearings are no greater than they would be in a four.



Instrument board—all recording instruments combined in one unit and all switches instantly accessible to driver

Detroit Detachable Sedan Top

(Suitable for Models C and D)

\$165.00



Here is a picture of a 1915 Detroit equipped with a Sedan Top.

Beauty and style in every line, isn't there?

Here is a car at a moderate price, with all the essential comforts of the highest priced closed car—one that is markedly distinctive among others of its price division.

The Detroit Sedan Top is the result of many months of experiments in evolving a detachable top that didn't fairly shout its identity as such.

Enjoy the pleasures of your open Detroit touring car in the summer, and when the chilly days and nights begin, you can transform it, in a very brief time, to the coziest, most comfortable and at the same time the most slightly of closed cars.

You simply remove the one-man summer top (a few minutes' work), lift the Sedan Top into position, tighten two bolts and eighteen wood screws, and you have a Sedan type car that is proof against the elements and in which you can travel in the most complete comfort regardless of rain, snow or cold winds.

Side curtains are a necessary part of the equipment of a touring car in summer, and to a certain extent they afford protection from the elements in winter.

The extra cost of a Sedan Top, however, is much more than offset by the increased pleasure and comfort of bad weather driving.

The new top is strongly constructed, is easily attached, and handsome in appearance, its lines harmonizing perfectly with those of the Model C and Model D touring cars.

The exterior is handsomely finished in Pantasote. The underside has a lining of felt $\frac{3}{8}$ of an inch all around, which protects the upper edge of the body and prevents rattle. It is firmly attached to the body at the windshield, front doors and top irons. But a few minutes is required to attach. Whipcord is the material used in trimming the top. The upper

halves of the doors are separate from the top and are attached to the touring car doors. These are made to fit closely in the frames and are entirely airtight. Width of these doors from sill to roof is 48 ins. in front and 51 ins. in rear. A dome light is part of the Sedan Top equipment.

Rear side windows are constructed so they can be opened partially or wholly and, in conjunction with range vision ventilating window shield, form a positive system of ventilation. Maximum light is assured by ample glass panels all around car.

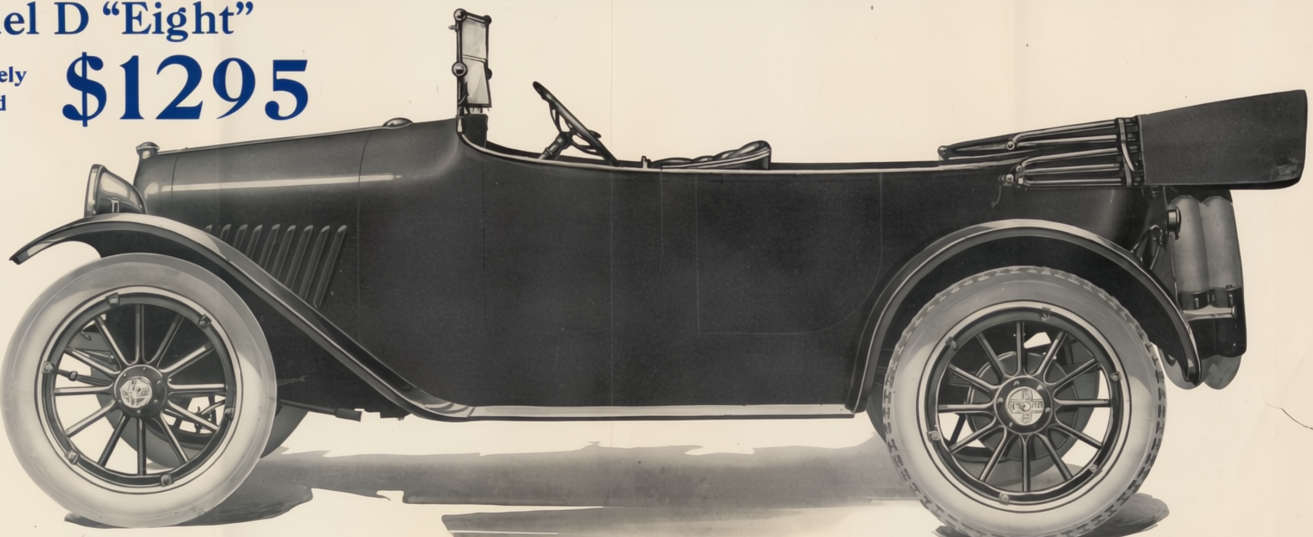


Roomy interior of Detroit Sedan

Model D "Eight"

Completely
Equipped

\$1295



HERE is the new Detroit—the lowest priced Eight-Cylinder car in the world. Study the body lines carefully—

Note that it is the true streamline type—observe how the lines slope gently from the rounded radiator, sweeping backward without a break in the surface smoothness.

The body lines of the Detroit represent the best of the ideas of the famous body designers in Europe—in this respect it is distinctive among medium-priced American cars.

The beautiful lines of the Detroit compare with many other cars in its class as the gown of a French designer compares with the effort of a village dressmaker.

The car has the style that so strongly appeals to discriminating motorists.

The beauty of line is enhanced by the rich finish—a deep Kimball green over all, with gold stripe. There are 20 operations in painting a Detroit body, the result being a high finish that retains its fine luster for several seasons, with ordinary care.

Note the low-hung construction, which means steadiness at high speed and minimum skidding tendencies on slippery pavements.

Now, to step in:

The doors are of ample width—24 inches. When you seat yourself behind the wheel you sink into deep Turkish type cushions upholstered in real leather.

The steering wheel is set at just the right angle for the most comfortable steering—one of the features of the Detroit is the ease with which it is handled, so that it is possible to drive a whole day at a stretch without feeling fatigued.

You find that the control pedals can be adjusted so that a very tall or a very short person can enjoy maximum comfort.

The spark and throttle levers respond to the slightest touch—the electric horn button is at the top of the steering post column, where it can be reached most conveniently.

Now for the gear shift:

The lever is located so that the hand grasps the ball-head almost without bending the body. There is very little throw for the different speeds—changing gears is nearly effortless.

Speedometer, ammeter, clock, oil signal, electric light push buttons and instrument light are grouped in the center of the instrument board.

A slight pressure of the foot on the starting button, and the wonderful eight-cylinder motor begins to purr—so little vibration is there that its operation is scarcely noticeable.

It is necessary to ride behind the Detroit "Eight" motor to realize fully what a remarkable mechanism the eight-cylinder motor really is. Its performance never fails to surprise even the most skeptical.

Quantity Deliveries of Detroit "Eights" will be Made Throughout the Season

The Eight-Cylinder Detroit Motor

S. A. E. HORSEPOWER 24.25

There are two sets of four cylinders block cast, the blocks having the same general appearance as any other block of four. The bore is 2 1/4 inches and the stroke 4 1/2, giving a total piston displacement of 314 cubic inches. The S. A. E. formula, which is not really applicable to this motor, gives it a 24.25 horsepower rating.

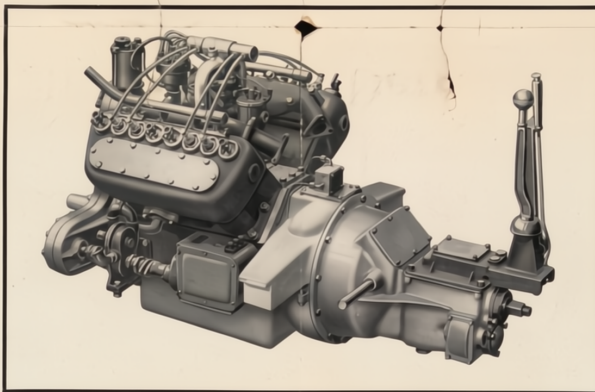
CONNECTING RODS IN PAIRS

The blocks of cylinders bolt to the aluminum crankcase which is common to both and which is of the barrel type with removable bell flywheel housing for assembling crankshaft, having two main bearings as follows: Front 1 1/2 in. x 2 3/32 in.; rear 1 1/2 in. x 4/4 in. Both sets of connecting rods connect to this shaft, one throw bearing taking care of a pair of rod ends in opposite cylinders. In order for both to fasten to the same bushing, one rod has a yoked end, the other rod end fitting within the yoke arms. Two caps are thus required for the yoke rod, one for each arm of the yoke. These fit around the outer part of the bushing, gripping it rigidly, due to the cap bolts, and, in addition, pins go through the rod into the bushing so as to insure the two moving together. The other rod fits around the bushing within the yoke and is free to turn on the bushing. Thus in operation the bearing for the yoke-end rod is the inner surface of the bushing against the shaft, while that of the other rod is the outer surface of the bushing. In operation, therefore, the bearing for yoke-end rod is the inner shaft. These bearings have babbit linings reinforced by bronze shells. Thus there are four (15/16 x 2 3/4) connecting rod bearings on the crankshaft just as a four-cylinder motor would have.

CAMSHAFT

Directly above the crankshaft is the single camshaft with eight cams, one operating two opposite inlet valves or two exhausts as the case may be. The cam assembly is on the underside of a plate which bolts to the top of the crankcase between the two blocks of cylinders. Pivoted to this plate also are the small arms which are interposed between the ends of the push rods and the cams so that the lift will be straight upward instead of having a side thrust component. The camshaft has three bearings.

Vertically in line above the camshaft and crankshaft is the distributor shaft which also drives the fan which has compensating



clutch to take care of sudden torque when motor starts.

VALVES

The valve operating mechanism of the Detroit "Eight" is as follows: The cam bears against the rollers in the ends of the small arms, which are pivoted to the plate above and which are interposed between the ends of the push rods and the cams, so that the lift will be straight upward instead of having a side thrust component. Adjustment of the

valves is obtained in the usual way by lengthening the tappet. The upper part of the tappet screws into the lower and the two are locked by a unit. The position of the cylinders makes the valves extremely accessible.

Shafts are driven by silent chains completely housed at the front end. The camshaft carries two sprockets, the outer carrying the chain running down to a crankshaft sprocket and the inner driving the chain which passes around the distributor shaft sprocket above.

LIGHT WEIGHT PARTS

In order to secure the accurate balance necessary to a high speed motor of this type so that it will be practically free from vibration, the pistons and connecting rods are machined to very close limits. Uniformity of weight is important. Remarkable lightness of these parts has been attained, due to the use of a special alloy steel for the rods which has great strength with extreme lightness, and also to the special form of the cast-iron pistons, each of which has three ring grooves with three thin steel rings per groove. The wrist pins are fixed in the connecting rods and oscillate in the pistons. They are constructed of chrome nickel steel tubing, case hardened and 5/8 inch in diameter. Valves 1 1/4" in clear 1/4" lift.

ORDER OF FIRING

In firing, the order alternates from one side to the other, so that there is a power impulse first from a cylinder on one side followed by an impulse from a cylinder on the opposite side. The order of firing is indicated below: (1-left—right). Looking from front 1-4-3-2-4-1-2-3-1. That is, No. 1 cylinder on the right fires first, then No. 4 on the left, No. 3 right, No. 2 left, and so on. The 1-inch carburetor occupies a position midway of the engine and between the cylinder blocks. A form of U manifold runs from it to the two cylinder blocks.

MOTOR LUBRICATION

As regards motor lubrication, the engine incorporates a positive system. A plunger pump located at the rear end of the motor and driven from the shaft takes the oil up from the sump in the lower part of the crankcase and forces it through a tube to the main bearings, also to a tube extending parallel with the camshaft and above it. Leads from this latter tube carry lubricant by gravity to the camshaft bearings and front end bearings. Connecting rod bearings are taken care of by splash, also wrist pins. Cylinder walls and pistons are lubricated by splash, also by a special system of pocketing oil in valve chamber and draining back directly to cylinder walls through small drilled holes.

STARTING, LIGHTING AND IGNITION

Starting, lighting and ignition is taken care of by a two-unit system with distributor coil and storage battery. Generator is driven from front end of crankshaft by silent chain. Starting motor fastens to front of bell-housing and engages with flywheel through inertia pinion drive.

GENERAL SPECIFICATIONS

BALL-BEARING TRANSMISSION

The selective three-speed and reverse type is used. The gears are large face, 3/4, and made of high-carbon steel, heat-treated and hardened in oil. The two shafts run on extra large ball bearings. The gears can be easily removed through the hand hole cover, without disturbing the case.

MULTIPLE DISC CLUTCH

The clutch is composed of six internal and five external discs faced with non-burning friction material, and runs dry. Clutch is placed on back of flywheel and has ball thrust throwout; pressure is furnished by one helical spring. Adjustment can be made through cover in top of case.

DIFFERENTIAL AND DRIVE PINION ASSEMBLY

The differential and drive gear assembly form a complete unit and may be disassembled from the rear axle without disarranging any other parts. Both pinion and bevel gear are adjustable, the adjusting being very simple, requiring only the loosening of a lock nut by way of access. The adjustment of the bevel gear is operated by removing the cover at the rear of the axle housing.

BRAKES

There are two sets of brakes operating on double drums fully enclosed. Both are internal expanding, the service brake being 14" in effective diameter and the emergency 10". Both are 1 1/2" in width and have improved cams which give a direct action and insure against dragging when not in use.

FRONT AXLE—1" beam, drop forging.

WHEELBASE—112 inches.

CLEARANCE—10 1/2 inches. BEARINGS—High grade ball bearings in the transmission, rear axle and wheels.

COLOR—Kimball green.

Two-unit electric starting and lighting system.

FULL-FLOATING REAR AXLE

The rear axle is of the full-floating type, with pressed steel housing, not only well ribbed and braced, but also reinforced by

rivets. It is especially designed for the Detroit. This construction retains the grease in the center around the differential and cannot possibly allow it to run out at the ends of the housing around the brakes. The housing is self-contained and will withstand an abnormal load of more than three times what is actually placed over it. The differential may be removed for inspecting and adjusting the bevel gear.

The pinion shaft is carried on one large single row annular bearing next to the pinion and an amply large double row thrust bearing at the forward end of the shaft. This double row bearing takes the thrust in either direction and makes it possible to get the pinion adjustment for quietness.

The teeth are of a special design, made to meet the requirements of the Detroit. The fact that never as yet has any trouble been experienced with this differential construction proves that it is fundamentally correct. The ratio of reduction between the motor and the rear axle is 4.333 to 1.

STEERING GEAR

The steering gear is of the worm and sector pattern type.

DRIVE AND CONTROL

Left hand drive and center control are used. The clutch and brake pedals and accelerator are all adjustable for length. Gears are shifted through single hand lever and emergency brake is also controlled by hand lever. The Detroit control is the simplest and most convenient control imaginable.

SPRINGS

The Detroit is known everywhere as a car of wonderful riding qualities. This is due in large measure to the excellence of the spring suspension, which is of a design employed in no other medium priced car. The front springs are of the conventional semi-elliptic type; the rear are three-quarter platform. None but the most expensive motor cars employ this design, which cuts out fully 20 per cent more of road shocks than do other types. All springs operate on cradles of ample proportions, riding freely, cushioning softly against jolts, and guarding against side-sway.

The spring bolts are supplied with two holes through which the grease is forced by the compression caps. This guarantees a free circulation of the lubricating medium.

The springs are fully protected against rebound by clips. The leaves cannot work sideways because of a specially designed protection on both sides at the ends of each leaf.

The grease cups are of an improved pattern and a tight fit, so that the grease is forced through to the inside of the bearing whenever the cup is screwed up.

FRAME

The channel section frame is very wide at the rear—33"—and narrowed in front to 29", enabling the car to be turned in a 25-foot circle. The frame is also dropped 3" just forward of the rear axle to give a lower center of gravity.

It is strongly riveted and braced throughout, particularly at the center and in front, where the motor suspension is located. No possible road shock can destroy the alignment.

As previously mentioned, the rear cross member has been redesigned so as to do away with the necessity of a special steel bracket for the rear cross spring. This is a unique Detroit design, allowing a perfectly smooth contour in the rear.

The wheelbase is now 112 inches.

WHEELS

These are of wood, artillery type, with 1 1/2" spokes in front and rear. The rear wheels are carried on annular ball bearings of ample proportions and the front on cup and cone bearings which are adjustable. Straight side 33" by 4" tires are used.

CONVENIENCES

All the instruments are placed on a special instrument board comprising a unit, and they may all be detached separately or collectively by removing the plate. The wiring may be examined from time to time by the same simple method.

The cut-out is placed under the heel of the right foot and may be operated either by foot or hand. The starting switch is under

the left foot. All instruments are illuminated at night by a special incandescent lamp.

The gasoline tank, which is in the cowl, is equipped with a positive indicator.

The battery is securely placed under the rear floor board, accessible and at the same time concealed from view. The running boards are free from all encumbrances. Tires are carried at the rear on a duplex carrier.

No other car at this price provides facilities for carrying more than one tire—the Detroit does.

Both floor and toe boards are covered with pyramidal aluminum, and the doors are flush with the floor, making it easy to dust out the inside.

The rear tonneau is equipped with robe and foot rails. The front compartment also has a short robe rail as well as a foot rail.

In front of the driver, at the left of the instrument board, is a rack for carrying newspapers, road guides, etc.

EQUIPMENT

The equipment consists of one-man top, dust boot, side curtains, rain-vision windshield, speedometer, instrument light, emergency lamp, cigar lighter, horn, head lights with double filament bulbs, tail light, non-skid tires on rear, straight side demountable rubber tires, muffler, tool kit, robe and foot rails both front and rear, jack.

ADDITIONAL FEATURES

The biggest car at the price: The lightest car of its class—less than 2,500 pounds; First complete streamline; Actual one-man top; Four 24-inch doors; Non-skid rear tires; Aluminum and inoleum running and floorboards; 20-operation body finish; Luxurious upholstery; 5 passengers without crowding; Ventilating, rain-vision windshield; Duplex tire carrier in rear; Rounded radiator with rubber mud shield; Tulle searchlights; Emergency search lamp; Electric cigar lighter; Aluminum-encased instrument board. All recording instruments combined in one unit; Positive gasoline gauge; Spark advance; Both foot accelerators and hand throttle; Horn button in center of steering wheel; Willard L. R. A. battery.